EFN (English Font display Network) module

INTRODUCTION

EFN (English Font display Network) is a display module displaying English character on 5x7 of Dot matrix LED through simple serial communication. It can display all English character and 0~9 of digits and that special character such as !, @, #, $, etc. When EFN receives ASCII code through RS232, it will display related character.

GENERAL DESCRIPTION

- RS232 serial communication (5V level, 9600 baud rate)
- Protocol is fixed as N, 8, 1.
- Connect up to 127 of EFN on one RS232C line by adjusting addresses
- Display English Capital/lower case, digit (as per ASCII code)

HOW TO USE

▶ TRANSMISSION FORMAT

If you send 3 bytes of data in the form shown below to EFN, EFN displays English character related to ASCII code.

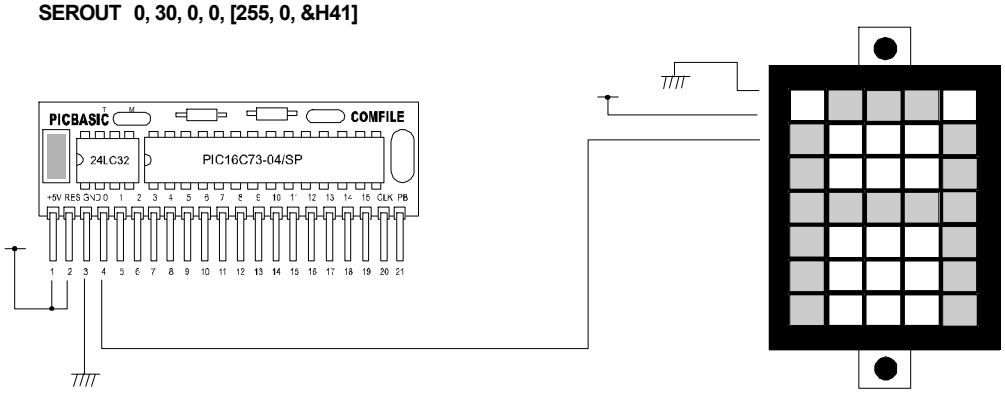
255	0~127	32~127
Start code	Address	ASCII code

- "255" is Start code.
- "0~127" is Address code indicating which EFN data will be sent to.
- "32~127" is ASCII code. EFN will display English character related to the ASCII code.

▶ USAGE IN PICBASIC

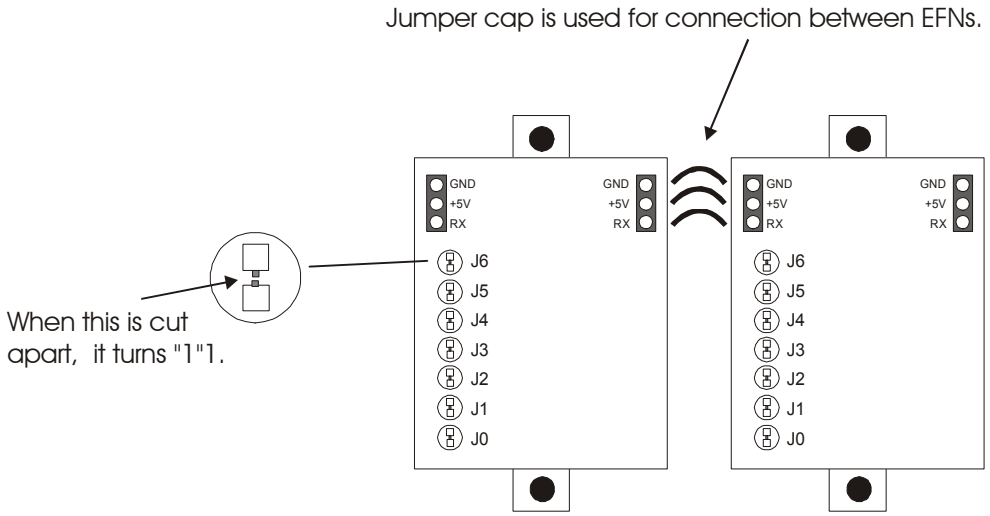
You can operate EFN much simpler by SEROUT instruction of PICBASIC language. The following is an example of SEROUT instruction with PB-1S/2S.

SEROUT 0, 30, 0, 0, [255, 0, &H41]



▶ ADDRESS SETTING

You can set address of EFN by cutting jumper on the back.



The state of connected Jumper is “0” and that of unconnected Jumper is “1”. The following table shows Addresses in accordance with jumper cutting. (It is same as Binary)

J6	J5	J4	J3	J2	J1	J0	? ? ? ?
0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	1
0	0	0	0	0	1	0	2
0	0	0	0	0	1	1	3
0	0	0	0	1	0	0	4
0	0	0	0	1	0	1	5
0	0	0	0	1	1	0	6
0	0	0	0	1	1	1	7
:	:	:	:	:	:	:	:
1	1	1	1	1	1	0	126
1	1	1	1	1	1	1	127

EFN is designed to be connected each other with Jumper cap etc. (You can connect them by soldering) the maximum number of Address is 127. It means that you can connect up to 127 of EFN on one RS232C line. In other word, you can display 127 characters by one RS232C line.

▶ ASCII CODE

The following table shows English ASCII codes, which EFN is able to display. You can read it in the forms of Hexadecimal by combining Higher 4bit and Lower 4bit. For instance, “A” is 41H (Hexadecimal) and “Q” is 51H (Hexadecimal).

Higher 4bit \ Lower 4bit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
2		!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6	`	a	b	c	d	E	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	U	v	w	x	y	z	{	|	}		

▶SAMPLE PROGRAM

The following source program is for testing EFN with PICBASIC module (PB-1S). it will display all possible font of EFN at certain interval.

```
        DIM A AS BYTE
10      FOR A=&H41 TO &H7F
        SEROUT 8,30,0,0,[&HFF,0,A]
        DELAY 200
        DELAY 200
        NEXT A
        GOTO 10
```

Caution

: Above source program is for PB-1S/2S. If you test EFN with other PICBASIC module such as PBM series, you should change baud rate according to kind of module. (Each module has it own value determining 9600 baud rate.)